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10/538,081	06/09/2005	Ernst H K Stelzer	3447-101	9229

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EXAMINER
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FINEMAN, LEE A

ART UNIT	PAPER NUMBER
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2872

NOTIFICATION DATE	DELIVERY MODE
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07/09/2007

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTO-PAT-Email@rfem.com

## Office Action Summary

Application No.

10/538,081

Applicant(s)

STELZER ET AL.

Examiner

Lee Fineman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 and 25-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 and 25-43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6/9/05 & 4/24/07 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 6/9/05
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This Office Action is in response to an amendment filed 24 April 2007 in which claims 1-7 and 9-23 were amended, claims 25-43 were added, and claim 24 was cancelled. Claims 1-23 and 25-43 are pending.

#### ***Drawings***

1. Drawings were received on 24 April 2007. These drawings are acceptable.

#### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 16-18, 21-23, 25-27, 29, 32-33, and 39-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Voie et al., "Orthogonal-plane fluorescence optical sectioning: three-dimensional imaging of macroscopic biological specimens", JOURNAL OF MICROSCOPY, vol. 170, Pt. 3, June 1993, pp. 229-236.

Regarding claims 16, 25, and 29, Voie et al. disclose in fig. 2 a microscope having at least one illumination beam path (along the x-axis) and at least one detection beam path (along the z-axis), characterized in that each illumination beam path is provided with a focusing arrangement (cylindrical lens), including a cylindrical lens (fig. 2), for producing a object illumination region (see fig. 1) which extends in the direction of an illumination axis of the

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illumination beam path (on the x-axis), which is also a linear object region extending in the direction of an illumination axis of the illumination beam path (on the x-axis), and transversely thereto (on the y-axis), a detection direction (on the z-axis) of the at least one detection beam path is approximately orthogonal to the object illumination region (figs. 1 and 2), and a mobile arrangement (specimen holder, see page 232) is provided for producing a relative movement between the object illumination region and an object to be studied (see page 232, specimen holder section, especially lines 9-17); and the object is mounted on a holder (specimen holder), the holder being movable within a sample chamber (see page 232, specimen holder section).

Regarding claims 17-18, 23, 26 and 27, Voie et al. further disclose that the mobile arrangement (specimen holder) can produce a rotational movement of the object and/or a displacement movement of the object studied (see page 232, specimen holder section, especially lines 9-17); that the mobile arrangement is designed to move the object while the object illumination region is essentially stationary (see page 232, specimen holder section, especially lines 9-17); and that the at least one mobile arrangement is designed to move the object to be studied essentially in the direction of the detection direction (z-axis) of the at least one detection beam path (see page 232, specimen holder section, especially lines 9-17).

Regarding claims 21 and 22, Voie et al. further disclose that the at least one detection beam path (along the z-axis) has a detector (CCD camera) with a multiplicity of detector pixels (see page 233, calibration section) and that the number and positioning of the detector pixels of the detector are selected so that the at least one detection beam path projects a section of the object, illuminated by the at least one illumination beam path in the object illumination region, essentially fully onto the detector (see page 233, calibration section).

Regarding claims 32 and 33, Voie et al. further disclose that a light source (laser) is a lamp or a laser (fig. 2), which provides light of one or more wavelengths (see page 231, Illumination system section and page 232, Illumination optics section) and that scattered light or fluorescent light of one or more wavelengths is used (see page 231, Illumination system section and page 232, Illumination optics section).

Regarding claim 39, Voie et al. further disclose that the at least one detection beam path (along the z-axis) can be adapted so that the detection direction is approximately orthogonal to the object illumination region when the object illumination region is shifted (see page 233, alignment section and fig. 4; the detection beam path remains approximately orthogonal as the object illumination region is moved).

Regarding claims 40 and 41, Voie et al. further disclose the object illumination region is substantially planar-shaped (see fig. 1, when looking perpendicular to the x- and y-axes) and the object illumination region is substantially linearly-shaped (see fig. 1, when looking perpendicular to the y- and z-axes or the x- and z-axes).

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 19, 20 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voie et al. in view of Horikawa, US 4,893,008.

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Regarding claims 19 and 28, Voie et al. disclose the claimed invention except for wherein the mobile arrangement is designed to move the object illumination region while the object is essentially stationary. Horikawa teaches that a system that moves the object and a system that moves the illumination region are art-recognized equivalents in the microscope art (column 1, lines 28-35). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use any of the above equivalent moving/scanning methods in the system of Voie et al. to effectively image the entire object.

Regarding claim 20, Voie et al. disclose the claimed invention except for wherein the at least one mobile arrangement is designed to move the at least one detection beam path in accordance with the movement of the at least one illumination beam path, at least in its region near the object. Horikawa further teaches in fig. 3 that a system that moves the illumination beam path (via 35) may also move the detection beam path (via 35 to detector 42) It would have been obvious to one of ordinary skill in the art at the time the invention was made to also provide movement of the one detection beam path as taught by Horikawa to provide higher contrast images because no diffused light comes from the area other than the light spot (Horikawa, column 1, lines 14-18).

6. Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voie et al. in view of Horikawa as applied to claim 29 above and further in view of Lee, US 2002/0163717 A1.

Voie et al. in view of Horikawa as applied to claim 29 above disclose the claimed invention except for explicitly stating that the cylindrical lens can be rotated about the

illumination axis and/or displaced in the direction of the illumination axis and/or the cylinder axis, and/or can be tilted via the cylinder axis with respect to the illumination axis and the movement of the cylindrical lens is a high-frequency movement. Lee teaches in fig. 6 a scanning method wherein the cylindrical lens (206) can be rotated about the illumination axis and/or displaced in the direction of the illumination axis and/or the cylinder axis, and/or can be tilted via the cylinder axis with respect to the illumination axis (page 3, sections [0040]-[0042]) and the movement of the cylindrical lens is a high-frequency movement (relative to a slower moving motor system, see section [0042], lines 13-17). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the moving/scanning of the light beam be done by the displacement of the cylindrical lens as taught by Lee to provide a faster, more efficient scanning of the object (Lee, section [0042], lines 15-17).

7. Claims 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voie et al. in view of Stelzer et al., DE 4326473 A1.

Voie et al. disclose the claimed invention except for having at least two illumination beam paths with essentially opposite illumination directions are provided for producing at least locally overlapping object illumination regions and the illumination light of the two illumination beam paths interferes at least locally in the direction of the illumination axis in the region of the object illumination region and has a constant, adjustable phase. Stelzer et al. teach in figs. 1b and 3 a microscope system having at least two illumination beam paths (1) with essentially opposite illumination directions (figs. 1b and 3) are provided for producing at least locally overlapping object illumination regions (fig. 1b) and the illumination light of the two illumination beam paths

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interferes at least locally in the direction of the illumination axis in the region of the object illumination region and has a constant, adjustable phase (page 3, paragraphs 4-6 of machine translation). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a second illumination beam path as taught by Stelzer et al. to the system of Voie et al. to provide a better dissolution of the image (Stelzer, page 3, paragraphs 4-6 of machine translation).

8. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Voie et al. in view of Palcic et al., US 4,700,298

Regarding claim 38, Voie et al. further disclose has a detector (fig. 2 camera). Voie et al. disclose the claimed invention except wherein the detector can be moved laterally with respect to the detection direction of the at least one detection beam path. Palcic et al. teach that a system that moves the object by a scanning stage and a system that scans by moving the detector laterally are art-recognized equivalents in the microscope art (column 2, lines 22-36). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use any of the above equivalent moving/scanning methods in the system of Voie et al. to effectively image the entire object.

9. Claims 1-3, 5, 8-10, 15, 34, and 42-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voie et al. in view of Van Eijk et al., US 4,746,800.

Voie et al. further disclose that the object is to be held by a holder (specimen holder) in a sample chamber (see page 232, specimen holder section) in which it can moved along at least



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one direction (see page 232, specimen holder section). Voie et al. disclose the claimed invention except for the holder being configured so that the holder/mobile arrangement can be rotated around an axis corresponding essentially to the gravitational direction. Van Eijk et al. teaches an object holder which can be rotated around an axis corresponding essentially to the gravitational direction (see at least claim 8). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the object holder of Voie et al. be able to be rotated around an axis corresponding essentially to the gravitational direction as taught by Van Eijk et al. for the purpose of viewing different aspects of the object.

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Voie et al. in view of Van Eijk et al. as applied to claim 1 above and further in view of Horikawa.

Voie et al. in view of Van Eijk et al. as applied to claim 1 above disclose the claimed invention except for wherein the mobile arrangement is designed to move the object illumination region while the object is essentially stationary. Horikawa teaches that a system that moves the object and a system that moves the illumination region are art-recognized equivalents in the microscope art (column 1, lines 28-35). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use any of the above equivalent moving/scanning methods in the system of Voie et al. in view of Van Eijk et al. to effectively image the entire object.

11. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voie et al. in view of Van Eijk et al. and Horikawa as applied to claim 5 above and further in view of Lee.

Voie et al. in view of Van Eijk et al. and Horikawa as applied to claim 5 above disclose the claimed invention except for explicitly stating that the cylindrical lens can be rotated about the illumination axis and/or displaced in the direction of the illumination axis and/or the cylinder axis, and/or can be tilted via the cylinder axis with respect to the illumination axis and the movement of the cylindrical lens is a high-frequency movement. Lee teaches in fig. 6 a scanning method wherein the cylindrical lens (206) can be rotated about the illumination axis and/or displaced in the direction of the illumination axis and/or the cylinder axis, and/or can be tilted via the cylinder axis with respect to the illumination axis (page 3, sections [0040]-[0042]) and the movement of the cylindrical lens is a high-frequency movement (relative to a slower moving motor system, see section [0042], lines 13-17). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the moving/scanning of the light beam be done by the displacement of the cylindrical lens as taught by Lee to provide a faster, more efficient scanning of the object (Lee, section [0042], lines 15-17).

12. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voie et al. in view of Van Eijk et al. as applied to claim 1 above and further in view of Stelzer et al.

Voie et al. in view of Van Eijk et al. as applied to claim 1 above disclose the claimed invention except for having at least two illumination beam paths with essentially opposite illumination directions are provided for producing at least locally overlapping object illumination regions and the illumination light of the two illumination beam paths interferes at least locally in the direction of the illumination axis in the region of the object illumination region and has a constant, adjustable phase. Stelzer et al. teach in figs. 1b and 3 a microscope system having at

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least two illumination beam paths (1) with essentially opposite illumination directions (figs. 1b and 3) are provided for producing at least locally overlapping object illumination regions (fig. 1b) and the illumination light of the two illumination beam paths interferes at least locally in the direction of the illumination axis in the region of the object illumination region and has a constant, adjustable phase (page 3, paragraphs 4-6 of machine translation). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a second illumination beam path as taught by Stelzer et al. to the system of Voie et al. in view of Van Eijk et al. to provide a better dissolution of the image (Stelzer, page 3, paragraphs 4-6 of machine translation).

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Voie et al. in view of Van Eijk et al. as applied to claim 1 above and further in view of Palcic et al.

Regarding claim 14, Voie et al. further disclose has a detector (fig. 2 camera). Voie et al. in view of Van Eijk et al. as applied to claim 1 above disclose the claimed invention except wherein the detector can be moved laterally with respect to the detection direction of the at least one detection beam path. Palcic et al. teach that a system that moves the object by a scanning stage and a system that scans by moving the detector laterally are art-recognized equivalents in the microscope art (column 2, lines 22-36). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use any of the above equivalent moving/scanning methods in the system of Voie et al. in view of Van Eijk et al. to effectively image the entire object.

*Response to Arguments*

14. Applicant's arguments filed 24 April 2007 have been fully considered but they are not persuasive.

With regard to amended claim 1 (and original claim 10) the applicant argues that Van Eijk et al. is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the prior art is in field of applicant's endeavor, i.e., both are optical devices (the microscope of Voie et al. and the lithographic device of Van Eijk et al.) which image an object via optical elements to study, measure or analyze the object.

Regarding claims 16-23, the applicant argues that Voie et al. disclose only a planar illumination region and not a linear illumination region. The examiner respectfully disagrees. As shown in fig. 1, the illumination region is considered linear at least when looking perpendicular to the y- and z-axes or the x- and z-axes.

Regarding new claims 25-43 (and original claim 10), applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

15. It is noted by the Examiner that the drawing, specification and claim objections made in the previous Office Action have been withdrawn due to amendment by the Applicant.

*Conclusion*

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lee Fineman whose telephone number is (571) 272-2313. The examiner can normally be reached on Monday - Friday 7:30 - 5:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on (571) 272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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